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August 14, 2020

InVue Security Products
9201 Baybrooke Ln.
Charlotte, NC 28277

Dear Yasu Tamura,

Enclosed is the EMC Wireless test report for limited compliance testing of the InVue Security Products, Davinchi Charger, for a consumer devices (b), tested to the requirements of Title 47 of the CFR, Ch. 1, Subchapter A- Part 18 Subpart C for Industrial, Scientific, and Medical (ISM) Equipment.

Thank you for using the services of Eurofins E&E North America. If you have any questions regarding these results or if we can be of further service to you, please feel free to contact me.

Sincerely,

Michelle Tawmging

Michelle Tawmging
Documentation Department
Eurofins E&E North America

Reference: (\InVue Security Products\WIR108943-FCC18)

Eurofins MET Laboratories Inc. (Eurofins E&E North America) is part of the Eurofins Electrical & Electronics (E&E) global compliance network.

A2LA ACCREDITED
TESTING CERT #0591.01

Electromagnetic Compatibility
Test Report

for

InVue Security Products
Davinchi Charger

Tested under

Title 47 of the CFR, Ch. 1, Subchapter A- Part 18 Subpart C for Industrial, Scientific, and Medical (ISM) Equipment

Report: WIR108943-FCC18

August 14, 2020

Donald Salguero
Test Engineer, Wireless Lab

Michelle Tawmging
Documentation Department

Engineering Statement: The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the applicable limits. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested **is** capable of operation in accordance with the requirements of Title 47 of the CFR, Part 18, Subpart C under normal use and maintenance.

Deepak Giri
Manager, Wireless Lab

Report Status Sheet

Revision	Report Date	Reason for Revision
Ø	August 14, 2020	Initial Issue.

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List of Terms and Abbreviations

AC	**A**lternating **C**urrent
ACF	**A**ntenna **C**orrection **F**actor
Cal	**Cal**ibration
d	**M**easurement **D**istance
dB	**D**eci**b**els
dBµA	**D**eci**b**els above one **micro**amp
dBµV	**D**eci**b**els above one **micro**volt
dBµA/m	**D**eci**b**els above one **micro**amp **per m**eter
dBµV/m	**D**eci**b**els above one **micro**volt **per m**eter
DC	**D**irect **C**urrent
E	**E**lectric Field
ESD	**E**lectro**s**tatic **D**ischarge
EUT	**E**quipment **U**nder **T**est
f	**F**requency
CISPR	**C**omite **I**nternational **S**pecial des **P**erturbations **R**adioelectriques (International Special Committee on Radio Interference)
GRP	**G**round **R**eference **P**lane
H	Magnetic Field
HCP	**H**orizontal **C**oupling **P**lane
Hz	**H**ert**z**
IEC	**I**nternational **E**lectrotechnical **C**ommission
kHz	**k**ilo**h**ert**z**
kPa	**k**ilo**pa**scal
kV	**k**ilo**v**olt
LISN	**L**ine **I**mpedance **S**tabilization **N**etwork
MHz	**M**ega**h**ertz
µ**H**	**microh**enry
µ**F**	**microf**arad
µ**s**	**micros**econds
PRF	**P**ulse **R**epetition **F**requency
RF	**R**adio **F**requency
RMS	**R**oot-**M**ean-**S**quare
V/m	**V**olts **per m**eter
VCP	**V**ertical **C**oupling **P**lane

Figure 1: List of Abbreviations

1.0 Testing Summary

The following tests specified below were performed with the following results.

Reference and Test Description	Results	Comments
§18.307 Conduction limits (b) all other part 18 consumer devices	Compliant	Measured emissions were below applicable limits.
§18.309 Frequency range of measurements (a) for field strength measurements	Compliant	Measured emissions were below applicable limits.

Figure 2: Testing Summary

Eurofins MET Laboratories Inc. (Eurofins E&E North America) is part of the Eurofins Electrical & Electronics (E&E) global compliance network.

2.0 Equipment Configuration

2.1 Overview

Eurofins E&E North America was contracted by InVue Security Products to perform testing on the Davinchi Charger, under InVue Security Products purchase order number 73633.

This document describes the test setups, test methods, required test equipment, and the test limit criteria used to perform compliance testing of the InVue Security Products, Davinchi Charger.

In accordance with §2.948, the following data is presented in support of the verification of the InVue Security Products, Davinchi Charger. InVue Security Products should retain a copy of this document which should be kept on file for at least two years after the manufacturing of the Davinchi Charger has been **permanently** discontinued, as per §2.955(b).

The results obtained relate only to the item(s) tested.

Model(s) Tested:	Davinchi Charger (Tray Tab S7)
Model(s) Covered:	Davinchi Charger (Tray Tab S7)
Primary Power as Tested:	4.75 to 5.25VDC
Equipment Emissions Class:	B
Highest Clock Frequency:	48 MHz
Evaluated by:	Donald Salguero
Report Date:	August 14, 2020

Figure 3: EUT Overview

2.2 Test Site

Eurofins MET Laboratories Inc. (Eurofins E&E North America) is part of the Eurofins Electrical & Electronics (E&E) global compliance network.

All testing was performed at Eurofins E&E North America, 914 West Patapsco Ave., Baltimore MD 21230 All equipment used in making physical determinations is accurate and bears recent traceability to the National Institute of Standards and Technology.

Eurofins MET Laboratories, Inc. is a ISO/IEC 17025 accredited site by A2LA, Baltimore #0591.01.

Radiated Emissions measurements were performed in a semi-anechoic chamber. In accordance with §2.948(a)(3), a complete site description is contained at Eurofins E&E North America.

2.3 Measurement Uncertainty

Test Method	Typical Expanded Uncertainty	K	Confidence Level
RF Frequencies	±4.52 Hz	2	95%
RF Power Conducted Emissions	±2.32 dB	2	95%
RF Power Conducted Spurious Emissions	±2.25 dB	2	95%
RF Power Radiated Emissions	±3.01 dB	2	95%

Figure 4: Uncertainty Calculations Summary

2.4 Description of Test Sample

The Davinchi Charger is a wireless charger for a stylus. It is intended to use in retail store environment. Its main functions are to charge the stylus.

2.5 Equipment Configuration

The EUT was set up as outlined in Figure 8. All equipment incorporated as part of the EUT is included in the following list.

Ref. ID	Slot #	Name/Description	Model Number	Part Number	Serial Number	Rev. #
A	N/A	Tray Tab S7	F1761	F1761100	N/A	Rev9

Figure 5: Equipment Configuration

2.6 Support Equipment

Ref. ID	Name/Description	Manufacturer	Model Number	Customer Supplied Calibration Data
B	Power Supply (5VDC)	InVue	PS515-US	Not available
C	Stylus	Confidential	Confidential	Not available

Figure 6: Support Equipment

2.7 Ports and Cabling Information

Ref. ID	Port Name on EUT	Cable Description or reason for no cable	Qty	Length as tested (m)	Max Length (m)	Shielded? (Y/N)	Termination Box ID & Port Name
1	DCVin	2 conductor, 22AWG	1	1	1.01	No	B.VBUS
2	RFout	wireless, no cables	1	N/A	N/A	No	C.RFin

Figure 7: Ports and Cabling Equipment

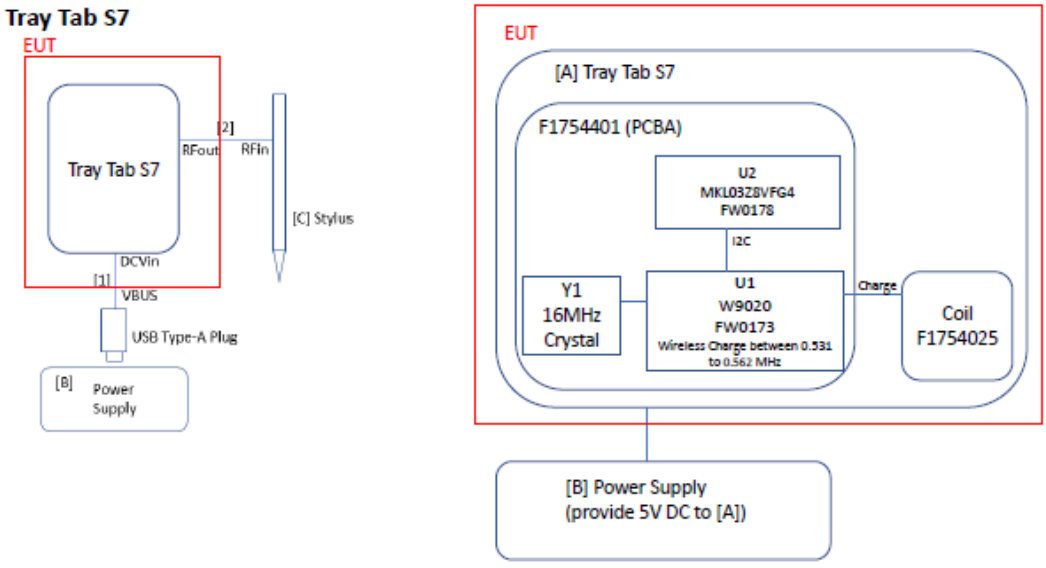

Figure 8: Block Diagram of Test Configuration

2.8 Mode of Operation

The EUT is simulated normal operation by laying down the stylus on top of the tray for charging. Other normal operation is to remove the stylus from the EUT.

2.9 Method of Monitoring EUT Operation

When the stylus is in the correction location for charging, white LED will be on. If the wrong location, the LED will be off.

2.10 Modifications

2.10.1 Modifications to the EUT

No modifications were made to the EUT.

2.10.2 Modifications to the Test Standard

No modifications were made to the test standard.

2.11 Disposition of EUT

The test sample including all support equipment (if any), submitted to the Electromagnetic Compatibility Lab for testing was returned to InVue Security Products upon completion of testing.

2.12 Test Software Used

Conducted Emissions - Trace Data Grabber version 01/26/2016
Radiated Emissions- EMC-REG-TDS-11, Radiated Emissions Prescan.xls version 06/29/11

3.0 Electromagnetic Compatibility Emission Criteria

3.1 Conducted Emission Limits

Test Requirement(s): **18.307** For the following equipment, when designed to be connected to the public utility (AC) power line the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies shall not exceed the limits in the following tables. Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal using a 50 µH/50 Ohms Line Impedance Stabilization Network (LISN).

(b) All other part 18 consumer devices:

Frequency of Emission (MHz)	18.307(b) ISM Conducted Limits (dBµV)	
	Quasi-Peak	Average
0.15 - 0.5	66 to 56*	56 to 46*
0.5 - 5	56	46
5 - 30	60	50
* Decreases with the logarithm of the frequency		

Figure 9: Conducted Limits for ISM calculated from FCC Part 18 Section 18.307(b)

18.311 The measurement techniques which will be used by the FCC to determine compliance with the technical requirements of this part are set out in FCC Measurement Procedure MP–5, ‘‘Methods of Measurements of Radio Noise Emissions from ISM equipment’’.

Test Procedure: The EUT was setup on a wooden table, 80cm above the ground plane. The method of testing, test conditions, and test procedures of MP-5 were used. The EUT was powered through a 50Ω/50µH LISN. An EMI receiver, connected to the measurement port of the LISN, scanned the frequency range from 150 kHz to 30 MHz in order to find the peak conducted emissions. All peak emissions within 20 dB of the limit, six highest peaks were re-measured using a quasi-peak and average detector. The fundamental frequency of the EUT falls below 30MHz, and the antenna is permanently attached. As a result, the antenna was removed and substituted with a suitable dummy load.

Test Results: The EUT was **compliant** with the requirements of this section. Measured emissions were below applicable limits.

Test Technician: Donald Salguero

Test Date: August 5, 2020

Conducted Emissions at the Mains Terminal Test Data:

Freq-uency (MHz)	Uncorrected Meter Reading (dBuV) QP	Cable Loss (dB)	Corrected Measure-ment (dBuV) QP	Limit (dBuV) QP	Pass/ Fail QP	Margin (dB) QP	Uncorrected Meter Reading (dBuV) Avg.	Cable Loss (dB)	Corrected Measure-ment (dBuV) Avg.	Limit (dBuV) Avg.	Pass/ Fail Avg.	Margin (dB) Avg.
0.242	35.67	0	45.67	62.03	PASS	-16.36	21.25	0	31.25	52.03	PASS	-20.78
0.162	37.96	0	47.96	65.36	PASS	-17.4	22.24	0	32.24	55.36	PASS	-23.12
0.556	26.77	0	36.77	56	PASS	-19.23	15.31	0	25.31	46	PASS	-20.69
1.045	23.88	0	33.88	56	PASS	-22.12	11.45	0	21.45	46	PASS	-24.55
1.81	17.75	0	27.75	56	PASS	-28.25	9.22	0	19.22	46	PASS	-26.78
6.91	20.6	0	30.6	60	PASS	-29.4	12.74	0	22.74	50	PASS	-27.26

Figure 10: Conducted Emission Limits, Phase Line, Test Data

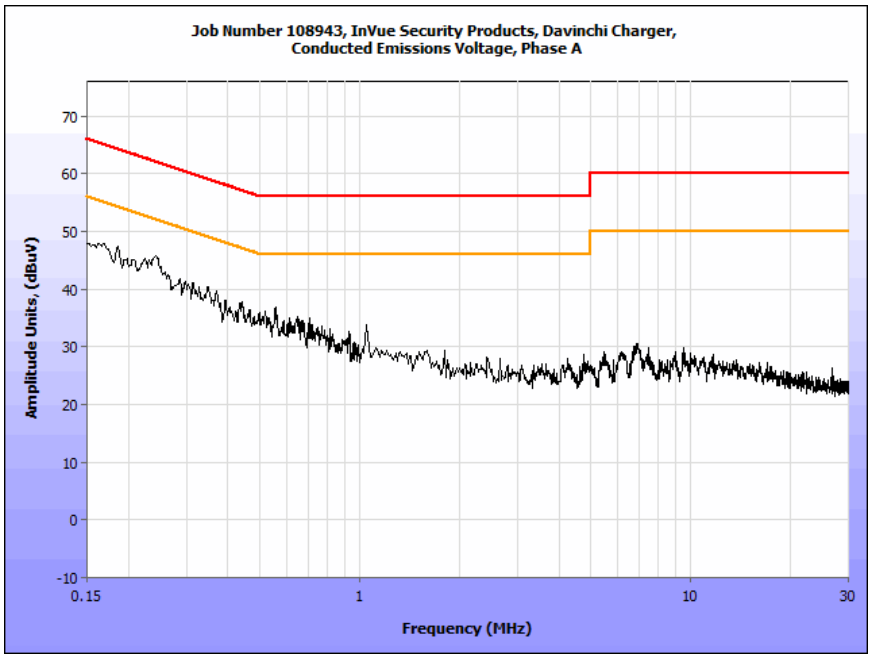

Figure 11: Conducted Emission Limits, Phase Line, Prescan

Freq-uency (MHz)	Uncorrected Meter Reading (dBuV) QP	Cable Loss (dB)	Corrected Measure-ment (dBuV) QP	Limit (dBuV) QP	Pass/ Fail QP	Margin (dB) QP	Uncorrected Meter Reading (dBuV) Avg.	Cable Loss (dB)	Corrected Measure-ment (dBuV) Avg.	Limit (dBuV) Avg.	Pass/ Fail Avg.	Margin (dB) Avg.
0.15	43.38	0	53.38	66	PASS	-12.62	32.11	0	42.11	56	PASS	-13.89
0.2265	37.86	0	47.86	62.58	PASS	-14.72	28.48	0	38.48	52.58	PASS	-14.1
0.2916	32.35	0	42.35	60.48	PASS	-18.13	23.85	0	33.85	50.48	PASS	-16.63
0.391	30.25	0	40.25	58.04	PASS	-17.79	19.41	0	29.41	48.04	PASS	-18.63
0.5622	26.68	0	36.68	56	PASS	-19.32	17.98	0	27.98	46	PASS	-18.02
0.9575	24.01	0	34.01	56	PASS	-21.99	16.54	0	26.54	46	PASS	-19.46

Figure 12: Conducted Emission Limits, Neutral Line, Test Data

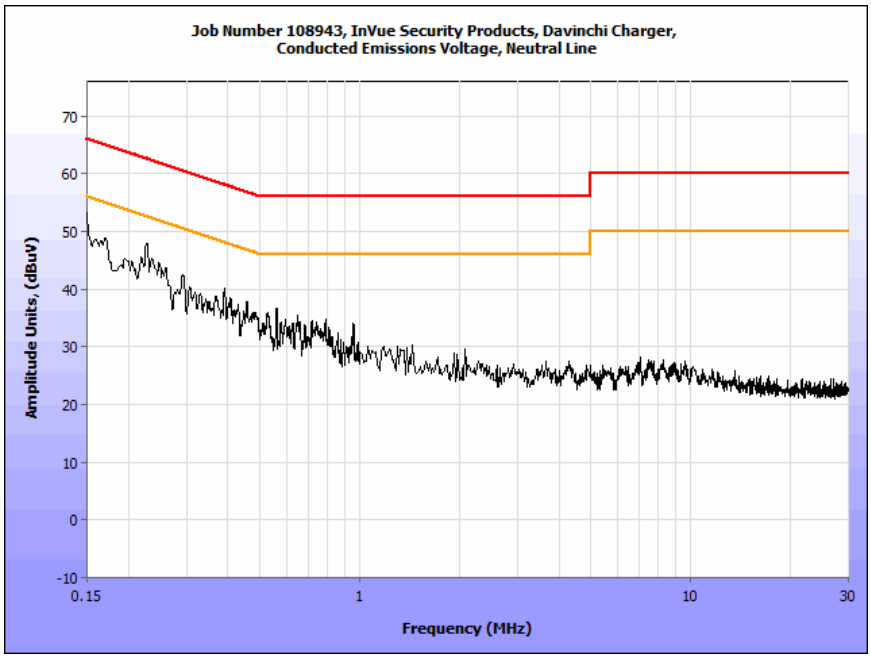

Figure 13: Conducted Emission Limits, Neutral Line, Prescan

3.2 Radiated Emission: Limits of Electromagnetic Radiation Disturbance

Test Method: ANSI C63.4- American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

Test Standard: Title 47 of the Code of Federal Regulations (CFR), Part 18 Subpart C

Test Requirement(s): 18.305 Field strength limits:
(a) ISM equipment operating on a frequency specified in § 18.301 is permitted unlimited radiated energy in the band specified for that frequency.
(b) The field strength levels of emissions which lie outside the bands specified in § 18.301, unless otherwise indicated, shall not exceed the following:

Equipment	Operating frequency	RF Power generated by equipment (watts)	Field strength limit (uV/m)	Distance (meters)
Any type unless otherwise specified (miscellaneous)	Any ISM frequency	Below 500 500 or more	25 25× SQRT(power/500)	300 [1]300
	Any non-ISM frequency	Below 500 500 or more	15 15× SQRT(power/500)	300 [1]300
Industrial heaters and RF stabilized arc welders	On or below 5,725 MHz Above 5,725 MHz	Any Any	10 ([2])	1,600 ([2])
Medical diathermy	Any ISM frequency Any non-ISM frequency	Any Any	25 15	300 300
Ultrasonic	Below 490 kHz	Below 500 500 or more	2,400/F(kHz) 2,400/F(kHz)× SQRT(power/500)	300 [3]300
	490 to 1,600 kHz Above 1,600 kHz	Any Any	24,000/F(kHz) 15	30 30
Induction cooking ranges	Below 90 kHz On or above 90 kHz	Any Any	1,500 300	[4]30 [4]30

[1] Field strength may not exceed 10 µV/m at 1600 meters. Consumer equipment operating below 1000 MHz is not permitted the increase in field strength otherwise permitted here for power over 500 watts.
[2] Reduced to the greatest extent possible.
[3] Field strength may not exceed 10 µV/m at 1600 meters. Consumer equipment is not permitted the increase in field strength otherwise permitted here for over 500 watts.
[4] Induction cooking ranges manufactured prior to February 1, 1980, shall be subject to the field strength limits for miscellaneous ISM equipment.

18.311 The measurement techniques which will be used by the FCC to determine compliance with the technical requirements of this part are set out in FCC Measurement Procedure MP–5, ‘‘Methods of Measurements of Radio Noise Emissions from ISM equipment’’. Although the procedures in MP–5 are not mandated, manufacturers are encouraged to follow the same techniques which will be used by the FCC.

Test Procedures: The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. Measurements were made with a loop antenna on the frequency range 9kHz – 30MHz. Measurements were made with a bilog antenna on the range 30-1000 MHz.

Radiated Emission measurements were made in accordance with the general procedures of ANSI C63.4-2014 "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40 GHz" as well as the procedures delineated in FCC Measurement Procedure MP-5, “Methods of Measurements of Radio Noise Emissions from ISM equipment”.

For each point of measurement, the turntable was rotated, the positions of the interface cables were varied, and the antenna height was varied in order to find the maximum radiated emissions.

Test Results: The EUT was **compliant** with the requirements of this section. Measured emissions were below applicable limits.

Test Technician: Donald Salguero

Test Date: July 31, 2020

Radiated Emissions Limits Test Results:

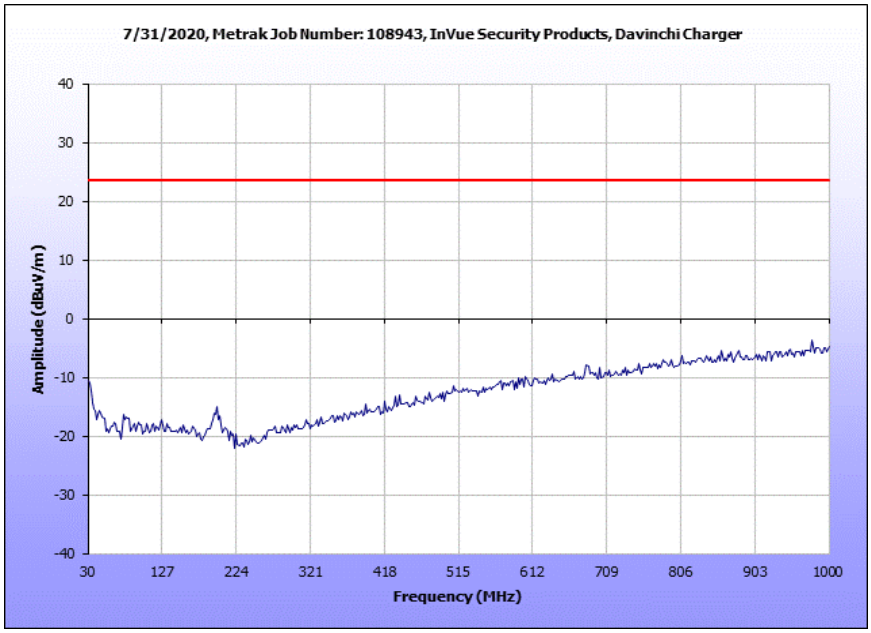

Figure 14: Radiated Emission: Limits of Electromagnetic Radiation Disturbance, cumulative_Radiated Emissions_30-1000 MHz

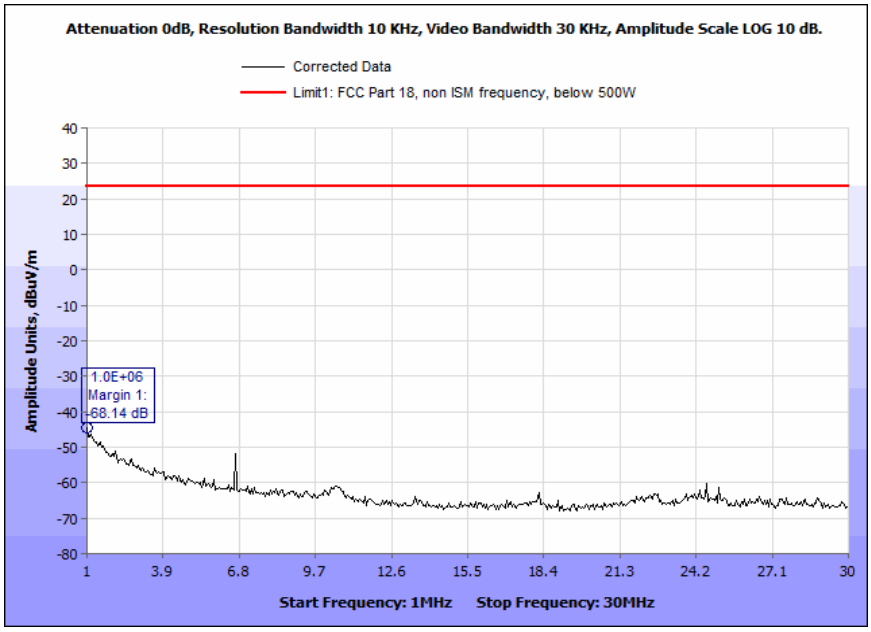

Figure 15: Radiated Emission: Limits of Electromagnetic Radiation Disturbance, Parallel_Radiated Emissions_1-30 MHz

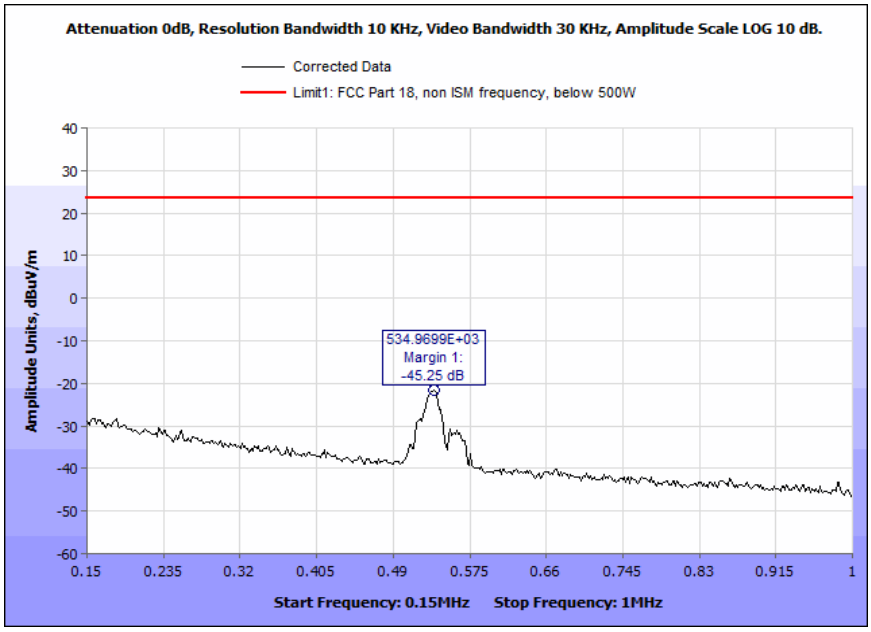

Figure 16: Radiated Emission: Limits of Electromagnetic Radiation Disturbance, Parallel_Radiated Emissions_150-1000 kHz

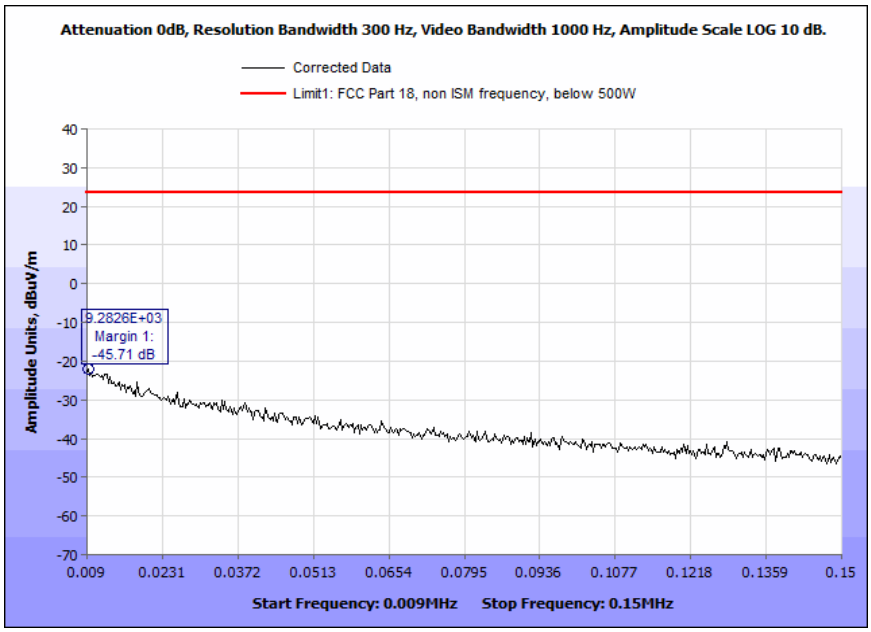

Figure 17: Radiated Emission: Limits of Electromagnetic Radiation Disturbance, Parallel_Radiated Emissions_9-150 kHz

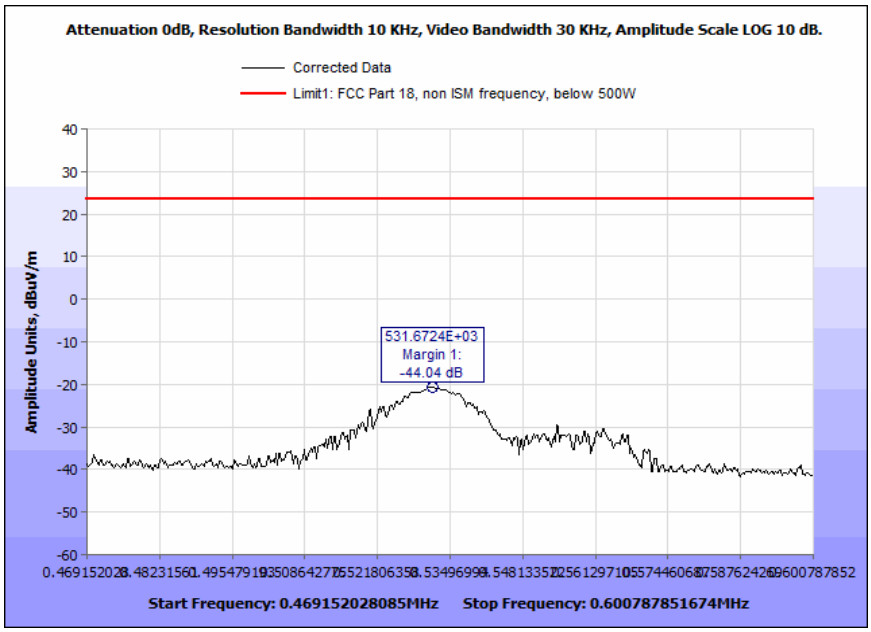

Figure 18: Radiated Emission: Limits of Electromagnetic Radiation Disturbance, Parallel_Radiated Emissions_Fundamental Emission 535kHz

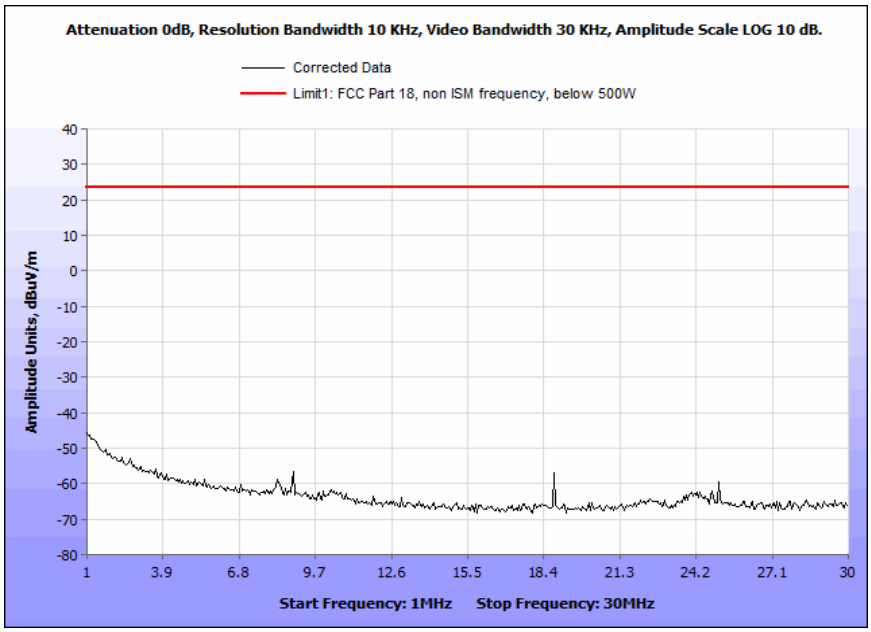

Figure 19: Radiated Emission: Limits of Electromagnetic Radiation Disturbance, Perpendicular_Radiated Emissions_1-30 MHz

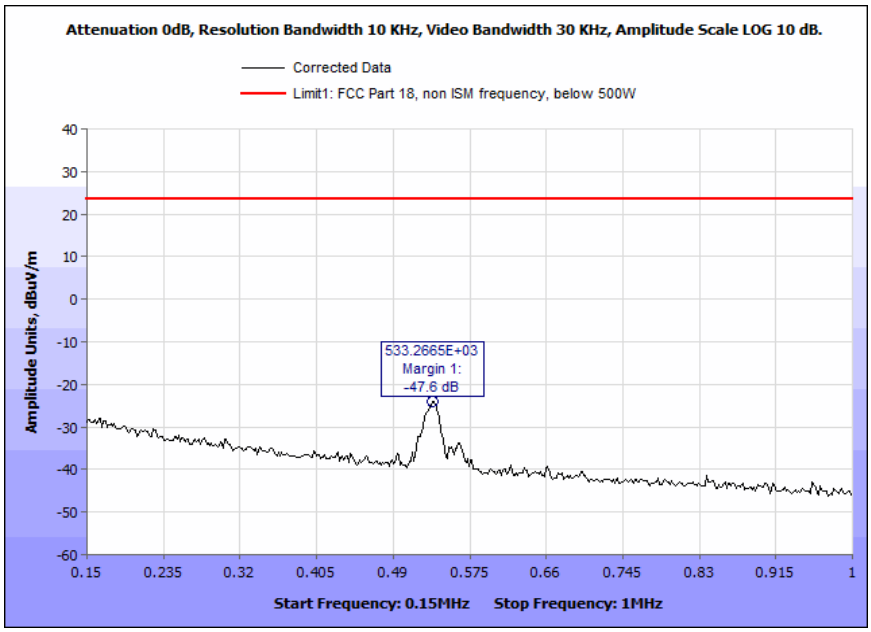

Figure 20: Radiated Emission: Limits of Electromagnetic Radiation Disturbance, Perpendicular_Radiated Emissions_150-1000 kHz

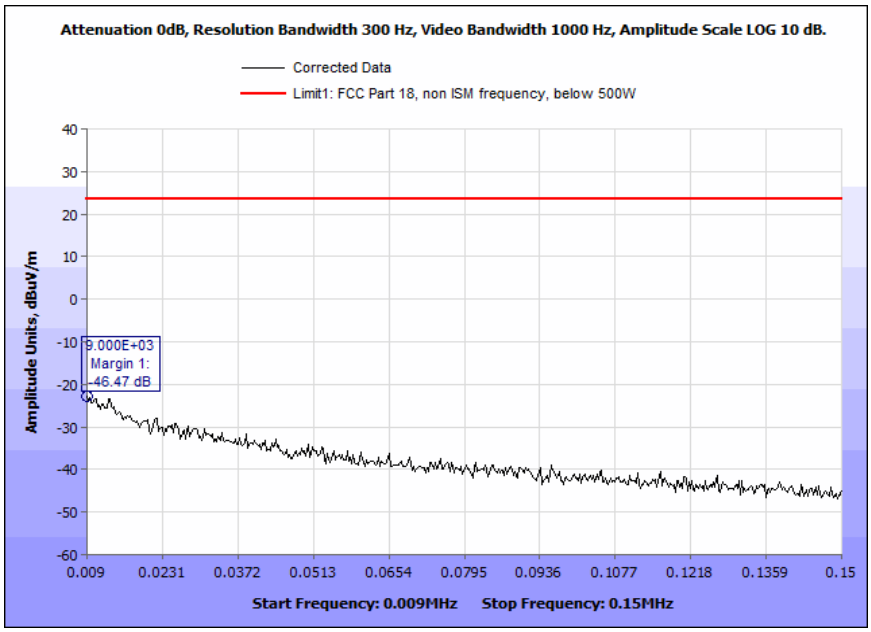

Figure 21: Radiated Emission: Limits of Electromagnetic Radiation Disturbance, Perpendicular_Radiated Emissions_9-150 kHz

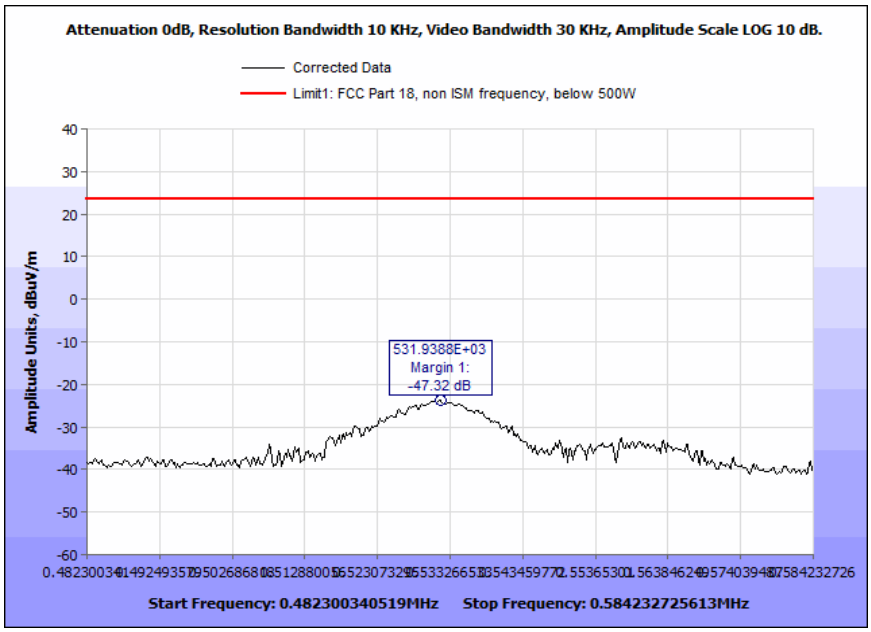

Figure 22: Radiated Emission: Limits of Electromagnetic Radiation Disturbance, Perpendicular_Radiated Emissions_Fundamental Emission 535kHz

4.0 Test Equipment

Calibrated test equipment utilized during testing was maintained in a current state of calibration per the requirements of ISO/IEC 17025:2017.

TEST NAME: CONDUCTED EMISSIONS (AC POWER)				TEST DATE:	
ASSET #	**NOMENCLATURE**	**MANUFACTURER**	**MODEL**	**LAST CAL**	**CAL DUE**
1T4771	PSA SPECTRUM ANALYZER	AGILENT TECHNOLOGIES	E4446A	02/26/2020	08/26/2021
1T7450	TRANSIENT LIMITER	COM-POWER	LIT-153A	NOT REQUIRED	
1T4504	SHIELDED ROOM	UNIVERSAL SHIELDING CORP	N/A	NOT REQUIRED	
TEST NAME: RADIATED EMISSIONS				**TEST DATE:**	
ASSET #	**NOMENCLATURE**	**MANUFACTURER**	**MODEL**	**LAST CAL**	**CAL DUE**
1T9586	ACTIVE LOOP ANTENNA	ETS-LINDGREN	6502	10/30/2019	10/30/2020
1T4751	ANTENNA - BILOG	SUNOL SCIENCES	JB6	05/02/2019	11/02/2020
1T4409	EMI RECEIVER	ROHDE & SCHWARZ	ESIB7	01/04/2019	01/04/2021
1T4300B	SEMI-ANECHOIC 3M CHAMBER SVSWR	EMC TEST SYSTEMS	NONE	06/30/2019	12/30/2020

Figure 23: Test Equipment List